

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION

ORDER NO. 92-040

SITE CLEANUP REQUIREMENTS FOR:

360 NORTH PASTORIA ENVIRONMENTAL CORPORATION,  
EASTMAN KODAK COMPANY, VERBATIM CORPORATION, AND  
AETNA LIFE INSURANCE COMPANY

360 NORTH PASTORIA AVENUE FACILITY  
SUNNYVALE, SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board) finds that:

1. **Facility Location and Description:** This Order presents the final remedial action plan for the Verbatim Corporation (Verbatim) manufacturing facility which is located at 360 North Pastoria Avenue in Sunnyvale, Santa Clara County. The area immediately surrounding the Verbatim facility consists of light industrial development. The current Verbatim facility occupies two leased buildings, Buildings 3 and 4, each occupying a lot of approximately 2.5 acres. Building 3, located at 360 North Pastoria Avenue, is owned by Aetna Life Insurance Company (Aetna), and is used for manufacture of floppy disks and cassette tape. Tetrahydrofuran (THF) is stored in two 8,000-gallon underground tanks on the south side of Building 3. Building 4, located at 445 Indio Way, is owned by Garcia Associates, Inc. and is leased to Eastman Kodak Company (Kodak) and 360 North Pastoria Environmental Corporation (NPEC). Kodak and NPEC in turn sublease Building 4 to Verbatim for uses such as research and development, dry chemical storage, and administrative offices.

The facility is bounded on the west by North Pastoria Avenue, on the south by Xidex Corporation (now Anacomp, Inc.), on the east by Soquel Way, on the north by an empty building and vacant lot, and on the northeast by Data General Corporation. Most of the non-building area is asphalt-paved parking lot. Two other buildings within the immediate area were previously occupied by Verbatim: 323 Soquel Way, formerly Building 1; and 435 Indio Way, formerly Building 2. Facility location and facility layout are shown in Figure 1 and 2 which are incorporated as a part of this Order.

2. **Site History:** Verbatim has been manufacturing magnetic storage media at this facility since 1975 when the facility's buildings were constructed. Prior to Verbatim's occupation of the facility's buildings, the land was used for farming. Kodak acquired Verbatim in 1984 and divested the company in May 1990. Since May 1990, Verbatim has been a wholly owned subsidiary of Mitsubishi-Kasei of Tokyo, Japan.
3. **Regulatory Status:** The Verbatim facility has previously been regulated under the Board's Site Cleanup Requirements Order No. 87-034, adopted on April 15, 1987. This Order supersedes Order No. 87-034 and comprises the final remedial action plan for the Verbatim facility.

As part of Kodak's sale of Verbatim to Mitsubishi-Kasei in 1990 Kodak assumed responsibility for soil and groundwater cleanup at the Verbatim facility. A separate corporation (NPEC) was formed by Kodak to assume the responsibility of conducting environmental remediation at the Verbatim

facility. Kodak and NPEC are both named as dischargers for the release of THF at the Verbatim facility.

Verbatim, as the party who released the THF to the soil and groundwater at Building 3 of the Verbatim facility, and Aetna, as the current owner of Building 3 of the Verbatim facility, are also both named as dischargers. However, Kodak and NPEC have assumed full responsibility to complete all necessary soil and groundwater remedial action programs related to the Verbatim facility and the groundwater contaminant plume emanating from that facility.

Therefore, with the exception of Provisions C.2.a., C.2.b., and C.2.c., Verbatim and Aetna are secondarily responsible for the soil and groundwater cleanup. Verbatim and Aetna are responsible only in the event that Kodak and NPEC fail to comply with prohibitions, specifications, and provisions of this Board Order. Kodak, NPEC, Verbatim and Aetna are hereinafter collectively referred to as dischargers.

4. **Facility Contamination Chronology:** Investigation at the Verbatim facility began in 1982 due to the presence of two underground THF storage tanks on the south side of Building 3. At that time, groundwater contamination detected did not appear to originate from Verbatim's storage tanks, but appeared to have migrated onto the facility from upgradient source(s). In mid-1983, Verbatim entered into a consortium with adjacent facilities, Data General Corporation, Zymos, and Xidex Corporation, to further explore the area-wide groundwater contamination. In 1984, THF was detected in two shallow wells in the area immediately south of Verbatim Building 3. The source of the THF was found to be a faulty pump seal associated with one of the two 8,000-gallon underground storage tanks at Verbatim's facility. A new pump was then installed and the manway was sealed to the tank to prevent further release. This is the only known THF release to groundwater and soil from the Verbatim facility.
5. **Chemicals of Concern:** Verbatim's manufacturing process consists of mixing iron oxides, urethane, and THF. Only virgin THF and spent THF (a mixture of water and THF) are stored in the underground tanks. For purposes of this Order, the dischargers are responsible for the cleanup of THF found in soil and groundwater resulting from the release described in Finding 4 above. Additional chemicals are known to be present in groundwater in this area from releases at Xidex (upgradient) and Data General (downgradient). THF-contaminated groundwater has commingled with the plumes originating from these facilities. Cleanup at these facilities is addressed by separate Board Orders.
6. **Site Hydrogeology:** Verbatim is located in the Santa Clara Valley, a structural basin filled with marine and alluvial sediments. Deposition in the basin is dominated by alluvial sediments. The coarser deposits are probably the result of deposition in or near stream channels that drain the highlands that surround the basin. Finer grain deposits result from a variety of conditions with the eventual result of a heterogeneous sequence of interbedded sands, silts and clays. The hydrogeology of the Santa Clara Valley has typically been depicted as a series of three water-bearing zones separated by thicker clay units, possibly of marine origin. These clay units may serve as barriers to migration of water and are referred to as aquitards. Regionally these three units are frequently referred to as the A, B and C aquifers. The C aquifer is used as a municipal water supply throughout Santa Clara County.

The alluvial deposits beneath the Verbatim facility are typical of the Santa Clara Basin and consist

of interbedded sands, gravels, silts, and silty clays. Groundwater in this depositional sequence typically occurs in three permeable units, designated as zones A, B, and C.

The geology beneath the Verbatim site is variable. Silt and clay of low permeability is typically encountered between ground surface and the upper boundary of the uppermost water-bearing zone, designated as the A-zone. The upper boundary of the A zone is typically encountered between 13 and 25 feet below ground surface (BGS), and its lower boundary is between 23 and 46 feet BGS; the zone consists of between 4 and 26 feet of silty and clean, fine to coarse sands, sandy gravels, and gravelly sands. The A and B zones are typically separated by an aquitard of silty clay to clayey silt with low permeability and a thickness of several feet. The upper boundary of the B zone is known to be located approximately 53 feet BGS, and its lower boundary is approximately 86 feet BGS. The B and C zones are separated by an aquitard of dense blue clay. This aquitard is known to be discontinuous and the B zone is known to recharge the C zone at areas away from the Verbatim facility, such as the Santa Clara Valley forebay region. The nearest known interconnection between the B and C zones is more than two miles from the Verbatim facility.

Groundwater in the A zone flows toward the north-northeast, at a hydraulic gradient of about 0.004 ft/ft based on data generated from 1987 to 1991. The groundwater level in the A zone has been low due to recent regional drought conditions and is limiting pump rates.

7. **Interim Remediation, Groundwater:** Hydrogeologic investigations and groundwater monitoring have been conducted in the area of concern since 1984. Investigation results have shown that THF is present in the A-zone. Since August 1987, a groundwater extraction and treatment system installed by Xidex has been operating. This system treats extracted groundwater by an air stripping tower. Two of the four extraction wells, EX-2 and EX-3, are located on the Verbatim facility. This system is operated and maintained by Xidex (Xidex's system).

In March 1990, Verbatim completed construction of a groundwater extraction and treatment system consisting of three extraction wells (EX-5, EX-6, EX-7) and a steam stripping system, designed to control the downgradient edge of the THF plume to prevent further migration. Extraction well EX-6 is not currently operating since the water table has dropped below the screened interval of the well. A new extraction well, EX-8, was added to the system in January 1992. Treated groundwater is currently discharged to the City of Sunnyvale sanitary sewer. This groundwater extraction and treatment system is maintained and operated by NPEC (NPEC's system).

8. **Interim Remediation, Soil:** Soil investigation conducted in July 1987 indicated that high concentrations of THF were restricted to areas immediately adjacent to the THF tanks at depths between 9.7 and 23.7 feet below ground surface (BGS). In November 1989, Verbatim began operation of a vapor extraction system which consists of three vadose zone soil vapor extraction wells and a carbon adsorption system, to remediate unsaturated zone soils surrounding the THF tanks. The vapor extraction system had recovered approximately 385 gallons of THF by June 1991 when it was abandoned in preparation for tank removal. In February 1992 NPEC submitted a closure plan which includes a tank removal plan and a proposal for an enhanced soil vapor extraction system to further remediate THF-affected soil, subsequent to tank removal.

9. **Extent of Groundwater Contamination:** THF is present in the shallow A zone aquifer at and

downgradient of the Verbatim facility. THF was detected in the B zone near the source area in 1987, however THF has not been detected in the B zone since 1987. The A zone contaminant plume is shaped approximately as an elongated sphere, with the axis of elongation parallel to the predominant north-northeast direction of groundwater flow. The THF plume has been shrinking in size and decreasing in concentration over time as a result of the groundwater extraction and treatment. As of 1991, the 1-ppm edge of the plume has receded from 1,400 feet northeast of the tank area to approximately 400 feet, and the peak concentration of the plume has decreased from 2,000 ppm to approximately 100 ppm.

Additional chemicals are present in the groundwater as a result of releases from neighboring manufacturing facilities. Examples of these chemicals include methylene chloride, methyl ethyl ketone, acetone, 1-methoxy-2-propanol, 2-methoxyethanol, 1,1-DCA, 1,1-DCE, PCE and TCE. Remediation of these chemicals is not required of the dischargers and is addressed by separate Board Orders.

10. **Extent of Soil Contamination:** High concentrations of THF are restricted to areas immediately adjacent to the THF tanks. In 1987, the maximum THF concentration of 58,000 mg/kg was detected at 17.7 feet deep in soil boring SB-2, located south of the easternmost tank. A significant decrease in THF concentrations has occurred since the soil vapor extraction system began operation in 1989. Results of soil samples collected in October 1991 indicate that high concentrations of THF exist between 20 to 30 feet BGS, with the maximum concentration of 12,000 mg/kg detected at 25 feet deep from soil boring 5A located in the same general area of SB-2.
11. **Municipal Water Wells:** Groundwater wells operated by the City of Sunnyvale, and nearby Cities of Mountain View, Santa Clara, and Los Altos draw water from the deep, confined water-bearing zone (C zone) that lies between 200 and 250 feet BGS. The nearest municipal well to the Verbatim facility is located approximately 0.7 miles southeast (upgradient) from the Verbatim facility and is operated by the City of Sunnyvale. This well is part of an integrated drinking water supply system that draws from groundwater wells and surface water bodies including, but not limited to, the Lexington Dam, Stevens Creek, San Filipe Reservoir, and the Sacramento Delta. The integrated drinking water system supplies approximately 120,000 residents of Sunnyvale. The nearest municipal wells of Mountain View, Santa Clara and Los Altos are located approximately 1.7, 2.9, and 3.4 miles, respectively, from the Verbatim facility.
12. **Summary of Remedial Alternatives:** The dischargers initially screened various groundwater and soil remedial action technologies based on such criteria as: (1) protection of human health and the environment; (2) compliance with appropriate regulatory requirements; (3) cost effectiveness; and (4) use of permanent solutions and alternatives to the maximum extent practicable. The remedial technologies that passed the screening were assembled into a group of alternatives as follows:

#### Remedial Alternative 1 - No Further Action

Remedial alternative 1 involves taking no further action to treat, contain, or remove any of the contaminated soil or groundwater, and would rely on natural processes of biodegradation to reduce the THF concentrations in soil and groundwater until the cleanup levels are met. As such, remedial alternative 1 consists of the following element:

- Groundwater monitoring

Estimated time to achieve final cleanup objectives = 15 years

Estimated total present worth cost = \$2.4 Million \*

Remedial Alternative 2 - Existing Groundwater Extraction & Treatment w/o Soil Vapor Extraction

Remedial alternative 2 consists of the following elements:

- Groundwater monitoring
- Existing groundwater extraction and treatment by steam stripper (NPEC's system)

Estimated time to achieve final cleanup objectives = 9 years

Estimated total present worth cost = \$6.6 Million \*

Remedial Alternative 3 - Enhanced Soil Vapor Extraction & Existing Groundwater Extraction & Treatment

Remedial alternative 3 consists of the following elements:

- Groundwater monitoring
- Existing groundwater extraction and treatment by steam stripper (NPEC's system)
- Enhanced soil vapor extraction near the tank area

Estimated time to achieve final cleanup objectives = 2-3 years

Estimated total present worth cost = \$2.6 Million \*

13. **Selected Remedial Actions:** Based on an evaluation of the alternatives against the criteria described in Finding 12 above, the dischargers selected Remedial Alternative 3 as the proposed Remedial Action Plan (RAP) for the Verbatim facility. The detailed RAP includes:

- a. Institutional constraints in the form of a deed restriction for Verbatim's Building 3. The purpose of the deed restriction is to control site access, prevent the installation of water supply wells in the shallow water-bearing zones, and provide a warning for any subsurface construction activities. The deed restriction would be designed to "run with" Building 3 to ensure that any potential future site occupants would be aware of the contamination at this building, until the remedial actions are determined complete.
- b. In-situ soil vapor extraction (with an enhanced system that contains five vapor extraction wells) near the tank area, until the soil cleanup standard is achieved.
- c. Continued groundwater extraction via NPEC's system to control the plume migration, followed by treatment via steam stripper and discharge into the City of Sunnyvale's sanitary sewer system under a temporary agreement, until the groundwater cleanup standard is achieved.

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\* Total present worth costs have been calculated using a 10% annual increase.

- d. Continued groundwater monitoring during the cleanup period. Groundwater samples will continue to be collected to verify that cleanup is proceeding and that there is not horizontal or vertical migration of THF, above the cleanup standard, further downgradient or into deeper aquifers. Detailed sampling and reporting requirements will be contained in the self-monitoring program, Attachment C to this Order, or in a revised program approved by the Executive Officer.

Additionally, the continued operation of Xidex's groundwater extraction and treatment system by Xidex provides groundwater treatment at the Verbatim facility.

14. **Cleanup Standards:** The toxicological properties of THF have not been formally reviewed by the U.S. EPA or the State of California and no Applicable or Relevant and Appropriate Requirements (ARARs) are currently available. THF is considered a non-carcinogen since it exhibits threshold effects. The Health and Environmental Laboratories of the Eastman Kodak Company has conducted a literature review of available toxicological information concerning THF and an assessment of acceptable exposure levels for soil and groundwater in the following exposure scenarios: (a) direct residential exposure to THF in water, (b) direct residential exposure to THF in soil, and (c) potential exposure through secondarily-contaminated fish and shellfish.

The assessment was conducted based on methodologies presented in: (i) the Board's "Guidance Document for the Development of Health-Based Remedial Cleanup Levels for the South Bay Multi-Site Cooperative Superfund Program," (ii) the U.S. EPA Region IX "Risk Assessment Guidance for Superfund Health Risk Assessment," and (iii) the U.S. EPA "Risk Assessment Guidance for Superfund Volume 1 - Human Health Evaluation Manual (Part A)." Additionally, the dischargers conducted a soil modeling to assess the potential impact the THF-affected soils have on the groundwater immediately downgradient of the THF tank area.

Based on the assessed acceptable exposure levels and the soil modeling results, the dischargers proposed the THF cleanup standards of 1.0 mg/l for groundwater and 130 mg/kg for soil. The proposed cleanup standards are acceptable as final cleanup standards in that they are protective of human health and the environment, and are within the acceptable noncarcinogenic Hazard Index level of less than one.

15. **Uncertainty in Achieving Cleanup Standards:** The goal of the final remedy is to restore groundwater to its beneficial uses. Based on information obtained during the interim remedial actions and on a careful analysis of all remedial alternatives, the Board believes that the selected remedy will achieve this goal. However, previous studies suggest that groundwater extraction and treatment will not be, in all cases, completely successful in reducing contaminants to health-based levels in the aquifer zones. The Board recognizes that operation of the selected extraction and treatment systems may demonstrate the technical impracticability of reaching health-based groundwater quality standards. If it becomes apparent, during implementation or operation of the systems, that THF levels in groundwater have ceased to decline and are remaining constant at levels higher than the cleanup standard, the groundwater cleanup standard and the remedy may be reevaluated.

Likewise, the soil cleanup standard for the Verbatim facility has been developed based on predicted behavior of THF in soil, using mathematic modeling which employs assumptions not necessarily representative of actual field conditions. If it becomes apparent, during and after the

implementation or operation of the soil vapor extraction system, that THF-affected soil at or below the soil cleanup standard, has caused the THF in downgradient groundwater to remain at levels higher than the groundwater cleanup standard, the soil cleanup standard and the remedy may be reevaluated.

Any changes to the cleanup standards specified in Finding 14 or the remedy described in Finding 13 will require Board approval.

16. **Future Changes to Cleanup Levels:** If new information indicates cleanup standards cannot be attained or can reasonably be surpassed, the Board will decide if further final cleanup actions, beyond those completed, shall be implemented at this site. If changes in health criteria, administrative requirements, site conditions, or remediation efficiency occur, the dischargers will submit an evaluation of the effects of these changes on cleanup standards as specified in Finding 14.

The Board recognizes that the dischargers have already performed extensive investigative and remedial work at the Verbatim facility and that the dischargers are being ordered hereby to perform additional remedial tasks. It is in the public interest to have the dischargers undertake such remedial actions promptly and without prolonged litigation or the expenditure of public funds. The Board recognizes that an important element in encouraging the dischargers to invest substantial resources in undertaking such remedial actions is to provide the dischargers with reasonable assurances that the remedial actions called for in this Order will be the final remedial actions required to be undertaken by the dischargers. On the other hand, the Board also recognizes its responsibility to protect water quality, public health, and the environment, and that future developments could indicate that some additional remedial actions may be necessary.

The Board has considered and balanced these important considerations, and has determined that the remedial actions ordered herein represent the Board's best, current judgment of the remedial actions to be required of the dischargers. The Board will not require the dischargers to undertake additional remedial actions with respect to the matters previously described herein unless: (1) conditions at the site and downgradient plume area, previously unknown to the Board, are discovered after adoption of this Order, or (2) new information, including new toxicological data concerning THF, is received by the Board, in whole or in part after the date of this Order, and these previously unknown conditions or this new information indicates that the remedial actions required in this Order may not be protective of public health and the environment. The Board will also consider technical practicality, cost effectiveness, State Board Resolution No. 68-16 and other factors evaluated by the Board in issuing this Order in determining whether such additional remedial actions are appropriate and necessary.

17. **State Board Resolution 88-63** On March 30, 1989, the Board incorporated the State Board Policy of "Sources of Drinking Water" into the Basin Plan. The policy provides for a Municipal and Domestic Supply designation for all waters of the State with some exceptions. Groundwater of the State are considered to be suitable or potentially suitable for municipal or domestic supply except where: 1) the total dissolved solids in the groundwater exceed 3000 mg/L, and/or 2) the water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day. Based on data submitted by the dischargers, the Board finds that neither of these two exceptions apply to the A zone at the Verbatim facility and its downgradient plume area. Thus, the shallow aquifer at the Verbatim facility and its

contaminant plume area are considered to be potential sources of drinking water.

18. **State Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California"** On October 28, 1968, the State Water Resources Control Board adopted Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California". This policy calls for maintaining the existing high quality of State waters unless it is demonstrated that any change would be consistent with the maximum public benefit and not unreasonably affect beneficial uses. The discharges of Tetrahydrofuran (THF) at the Verbatim facility which impacted groundwater were in violation of this policy; therefore, the groundwater quality needs to be restored to its original quality to the extent reasonable. For the purpose of establishing cleanup standards, the shallow groundwater at the Verbatim facility and its contaminated plume area are designated a potential source of drinking water.

Cleanup to the cleanup standard of 1 mg/l for THF would protect the primary beneficial use of the groundwater as a potential source of drinking water, based on available toxicological information of THF. For this reason, the cleanup standard was accepted as a concentration which meets the intent of Resolution No. 68-16.

The cleanup standard meets current applicable health criteria and restores the quality of the groundwater to the extent reasonable given technical and economic constraints. These constraints include the high additional incremental costs for removal of small amounts of additional chemicals and the need to minimize the removal of groundwater due to the drought to achieve acceptable remedial standards.

19. **Basin Plan** The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on December 11, 1991. The Basin Plan contains water quality objectives and beneficial uses for South San Francisco Bay and contiguous surface and ground waters.
20. **Beneficial Uses** The existing and potential beneficial uses of the groundwater underlying and adjacent to the Verbatim facility include:
- a. Industrial process water supply
  - b. Industrial service water supply
  - c. Municipal and Domestic water supply
  - d. Agricultural water supply
21. The dischargers have caused or permitted, and threaten to cause or permit waste to be discharged or deposited where it is or probably will be discharged to waters of the State and creates or threatens to create a condition of pollution or nuisance. Containment and cleanup measures need to be continued to alleviate the threat to the environment posed by the continued migration of the groundwater plume of contaminants.
22. This action is an order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of the CEQA pursuant to Section 15321 of the Resources Agency Guidelines.
23. The Board has notified the dischargers and interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the discharge and has provided them with the opportunity for a public hearing and an opportunity to submit their



written views and recommendations.

24. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the dischargers, their agents and assigns or successors, shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect the beneficial uses of the waters of the State is prohibited.
2. Further significant migration of contaminants through subsurface transport to waters of the State is prohibited.
3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of contaminants are prohibited.

B. SPECIFICATIONS

1. The storage, handling, treatment or disposal of soil or groundwater containing contaminants shall not create a nuisance as defined in Section 13050(m) of the California Water Code.
2. The dischargers shall conduct monitoring activities as determined by the Board's Executive Officer, including the self-monitoring program contained in Attachment C, to define the current local hydrogeologic conditions, and the lateral and vertical extent of groundwater contamination. Should monitoring results show evidence of THF migration, additional characterization of THF extent may be required.
3. Final cleanup standards should be 1.0 mg/l of THF for groundwater and 130 mg/kg of THF for soil.
4. The dischargers shall implement the final remedial action plan described in Finding 13.

C. PROVISIONS

1. The dischargers shall submit to the Board acceptable monitoring program reports containing results of work performed according to the self-monitoring program in Attachment C, prescribed by the Board's Executive Officer.
2. The dischargers shall comply with the Prohibitions and Specifications above, in accordance with the following tasks and compliance time schedules:

INSTITUTIONAL CONSTRAINTS

- a. TASK 1 - PROPOSED CONSTRAINTS: Submit a technical report acceptable to

the Executive Officer that contains implementation procedures and time schedules for the proposed institutional constraints deemed necessary at Verbatim's Building 3 to protect public health and the environment. The proposed constraints shall include, at a minimum, a deed restriction prohibiting the use of the A and B aquifer groundwater as a source of drinking water, and other activities that could endanger the public health or the environment due to exposure to THF in soil and groundwater. Constraints shall remain in effect until groundwater and soil cleanup standards have been achieved and contaminant levels have stabilized.

COMPLETION DATE: May 15, 1992

- b. TASK 2 - PROPOSED DEED RESTRICTIONS: Submit a technical report acceptable to the Executive Officer that contains the draft deed restrictions proposed to be recorded, as delineated in Task 1 above.

COMPLETION DATE: 45 days after approval of Task 1.

- c. TASK 3 - CONSTRAINTS IMPLEMENTED: Submit a technical report acceptable to the Executive Officer documenting that the proposed and approved constraints have been implemented.

COMPLETION DATE: 45 days after approval of Task 2.

#### SOIL REMEDIATION

- d. TASK 4 - ADDITIONAL SITE CHARACTERIZATION AND PROPOSED FINAL DESIGN OF SOIL VAPOR EXTRACTION SYSTEM: Submit a technical report acceptable to the Executive Officer that contains the final design of the proposed soil vapor extraction system network, based on results of the additional soil sampling proposed in the February 5, 1992 "Closure Plan for Two Tetrahydrofuran Underground Storage Tanks." The soil sampling results would further characterize the THF-affected soil beneath and surrounding the former tanks. Installation of the soil vapor extraction system shall not begin until the system design is approved.

COMPLETION DATE: July 15, 1992

- e. TASK 5 - SOIL VAPOR EXTRACTION: Submit a technical report acceptable to the Executive Officer documenting the completion of the installation of the proposed soil vapor extraction system. The technical report should also contain a projected operation schedule which leads to total completion of soil remediation by August 31, 1994, and allows sufficient time for a system effectiveness evaluation and Board staff review of any required system modification.

COMPLETION DATE: 90 days after approval of Task 4

- f. TASK 6 - VAPOR EXTRACTION CURTAILMENT CRITERIA AND PROPOSAL: Submit a technical report acceptable to the Executive Officer that contains a

proposal for curtailing pumping from any soil vapor extraction well(s) or piping, and the criteria used to justify such curtailment. This report shall include a proposal indicating the locations of borings and sampling intervals to determine concentrations of THF remaining in soil. The proposal may include the temporary termination of vapor extraction well operation for an extended period of time to study the effects on chemical migration prior to well abandonment.

If the dischargers propose that it is not practicable to achieve the soil cleanup standard for THF through continued soil vapor extraction in all or any portion of the soil plume area and that significant quantities of chemicals are not being removed through soil vapor extraction, the dischargers shall evaluate the reductions in chemical concentrations and an alternative soil cleanup standard for THF that can be practically achieved. The technical report shall evaluate alternative means of achieving the soil cleanup standard and whether conditions for waiving the standard are met (e.g., that meeting the soil cleanup standard is technically impracticable from an engineering perspective) and that the alternative soil cleanup standard proposed for THF will be protective of human health and the environment.

COMPLETION DATE: 90 days prior to proposed curtailment of any soil vapor extraction well or treatment system.

- g. TASK 7 - COMPLETION OF SOIL REMEDIATION: Document in a technical report acceptable to the Executive Officer the completion of the soil remediation. This report should include the results of chemical analyses of appropriate THF samples from the source area.

COMPLETION DATE: One month following the completion of all soil remediation activities but no later than August 31, 1994.

#### CURTAILING GROUNDWATER EXTRACTION

- h. TASK 8 - WELL PUMPING CURTAILMENT CRITERIA AND PROPOSAL: Submit a technical report acceptable to the Executive Officer containing a proposal for curtailing pumping from groundwater extraction well(s) and the criteria used to justify such curtailment. This report shall include data to demonstrate that the groundwater cleanup standard for THF has been achieved and has stabilized or is stabilizing, and that the potential for THF levels rising above the cleanup standard is minimal. Such demonstration must be supported by results of at least two consecutive sampling rounds, and additional sampling rounds may be required if deemed necessary by the Executive Officer. This report shall also include an evaluation of the potential for THF to migrate downwards to lower aquifers. If the dischargers propose that it is not technically feasible to achieve the THF cleanup standard, the report shall evaluate an alternate THF standard that can be achieved. Cessation of pumping will require the concurrence of the Board's Executive Officer.

COMPLETION DATE: 90 days prior to proposed extraction well pumping

curtailment.

- i. TASK 9 - IMPLEMENTATION OF WELL PUMPING CURTAILMENT: Submit a technical report acceptable to the Executive Officer documenting completion of the well pumping curtailment.

COMPLETION DATE: 30 days after approval of the proposal for extraction well pumping curtailment.

#### STATUS REPORT

- j. TASK 10 - THREE-YEAR STATUS REPORT AND EFFECTIVENESS EVALUATION: Submit a technical report acceptable to the Executive Officer containing an evaluation of the effectiveness of the installed final cleanup measures for both groundwater and soil remediation; additional recommended measures to achieve final cleanup objectives and standards, if necessary; a comparison of previous expected costs with the costs incurred and projected costs necessary to achieve cleanup objectives and standards; and the tasks and time schedule necessary to implement any additional final cleanup measures.

This report shall evaluate and document the cleanup of contaminated groundwater and soil. If cleanup standards for THF have not been achieved and are not expected to be achieved through continued groundwater extraction and/or soil remediation, this report shall also contain an evaluation addressing whether it is technically feasible to achieve the cleanup standards, and if so, a proposal for procedures to do so.

COMPLETION DATE: April 15, 1995

#### NEW HEALTH CRITERIA

- k. TASK 11 - EVALUATION OF NEW HEALTH CRITERIA: Submit a technical report acceptable to the Executive Officer that contains an evaluation of how the final plan and cleanup standards would be affected, if new toxicological data or health criteria concerning THF are derived or promulgated.

COMPLETION DATE: 60 days after request made by the Executive Officer.

3. NPEC and Kodak are responsible for and shall comply with all tasks and compliance time schedules in Provision C.2. above, with the exception of Tasks 1, 2 and 3, for which, Aetna is responsible. If NPEC and Kodak fail to comply with any of the provisions of this Order for which they are responsible, within sixty (60) days of the Executive Officer's determination and actual notice, Aetna and Verbatim shall comply with the provisions of this Order as noticed.
4. If the dischargers are delayed, interrupted or prevented from meeting one or more of the completion dates specified in this Order, the dischargers shall notify the Executive Officer prior to the deadline for the completion date.

5. Technical reports summarizing the self-monitoring program results and the status of compliance with the Prohibitions, Specifications, and Provisions of this Order shall be submitted on a quarterly basis, according to the schedule below, commencing with the report for the second quarter 1992, due July 31, 1992.

QUARTER	First	Second	Third	Fourth
PERIOD	Jan.-March	April-June	July-Sept.	Oct.-Dec.
DUE DATE	April 30	July 31	October 31	January 31

The quarterly reports shall include:

- a. a summary of work completed since the previous quarterly report, and work projected to be completed by the time of the next quarterly report;
  - b. appropriately scaled and labeled maps showing the location of all monitoring wells, extraction wells, and existing structures;
  - c. updated water table and piezometric surface maps for all affected water bearing zones, and isoconcentration maps for THF in all affected water bearing zones, to be included at a minimum in the reports for the second and fourth quarters, or in the event of significant changes;
  - d. a summary tabulation of all groundwater levels and chemical analysis results for groundwater monitoring wells specified in the attached Self-Monitoring Program;
  - e. a summary tabulation of the volume of groundwater extracted and the THF concentrations for all groundwater extraction wells;
  - f. a status summary of soil remediation at all source areas, including the actual or projected date of vapor extraction system installation, an evaluation of the effectiveness of the vapor extraction system based on operational and monitoring data, and proposed modifications to the system, if necessary, to achieve the soil cleanup standard;
  - g. an estimate of volume or mass of contaminants removed by each remedial system in the quarter and a cumulative tabulation of the total volume or mass of contaminants removed;
  - h. identification of potential problems which will cause or threaten to cause noncompliance with this Order and what actions are being taken or planned to prevent these obstacles from resulting in noncompliance with this Order; and,
  - i. in the event of noncompliance with the Provisions and Specifications of this Order, the report shall include written justification for noncompliance and proposed actions and schedule to achieve compliance.
6. On an annual basis beginning on January 31, 1993, or as required by the Executive Officer, the dischargers' January 31 progress reports shall include, but need not be limited to, an evaluation of the progress of cleanup measures and the feasibility of meeting the groundwater cleanup standard for THF. This report shall include a discussion of the efficiency of the existing ground water extraction wells at

removing groundwater contamination during the previous year. If significant reductions in groundwater contamination levels are not being achieved, then the report shall propose construction of new and/or alternative extraction wells in order to increase the efficiency of the groundwater extraction systems. If the dischargers propose that it is not technically feasible to meet the cleanup standard for THF established by this Order, the report shall also contain an evaluation of the lowest concentration of THF that could be achieved as a cleanup level.

The Executive Officer may approve reduction of the scope of the above report based on a demonstration that the THF levels in the groundwater have stabilized and that the predicted change in groundwater quality is insignificant over a one year period.

7. All hydrogeological plans, specifications, reports, and documents shall be signed by or stamped with the seal of a registered geologist, engineering geologist or professional engineer.
8. All samples shall be analyzed by State certified laboratories or laboratories accepted by the Board using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain Quality Assurance/Quality Control records for Board review.
9. The dischargers shall maintain in good working order, and operate, as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.
10. Copies of all correspondence, reports, and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order, shall be provided to the following agencies:
  - a. Santa Clara Valley Water District
  - b. Santa Clara County Health Department
  - c. City of Sunnyvale

The Executive Officer may additionally require copies of correspondence, reports and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order to be provided to a local repository for public use.

11. The dischargers shall permit the Board or its authorized representative, in accordance with Section 13267(c) of the California Water Code:
  - a. Entry upon premises in which any contamination sources exist, or may potentially exist, or in which any required records are kept, which are relevant to this Order.
  - b. Access to copy any records required to be kept under the terms and conditions of this Order.
  - c. Inspection of any monitoring equipment or methodology implemented in response to this Order.

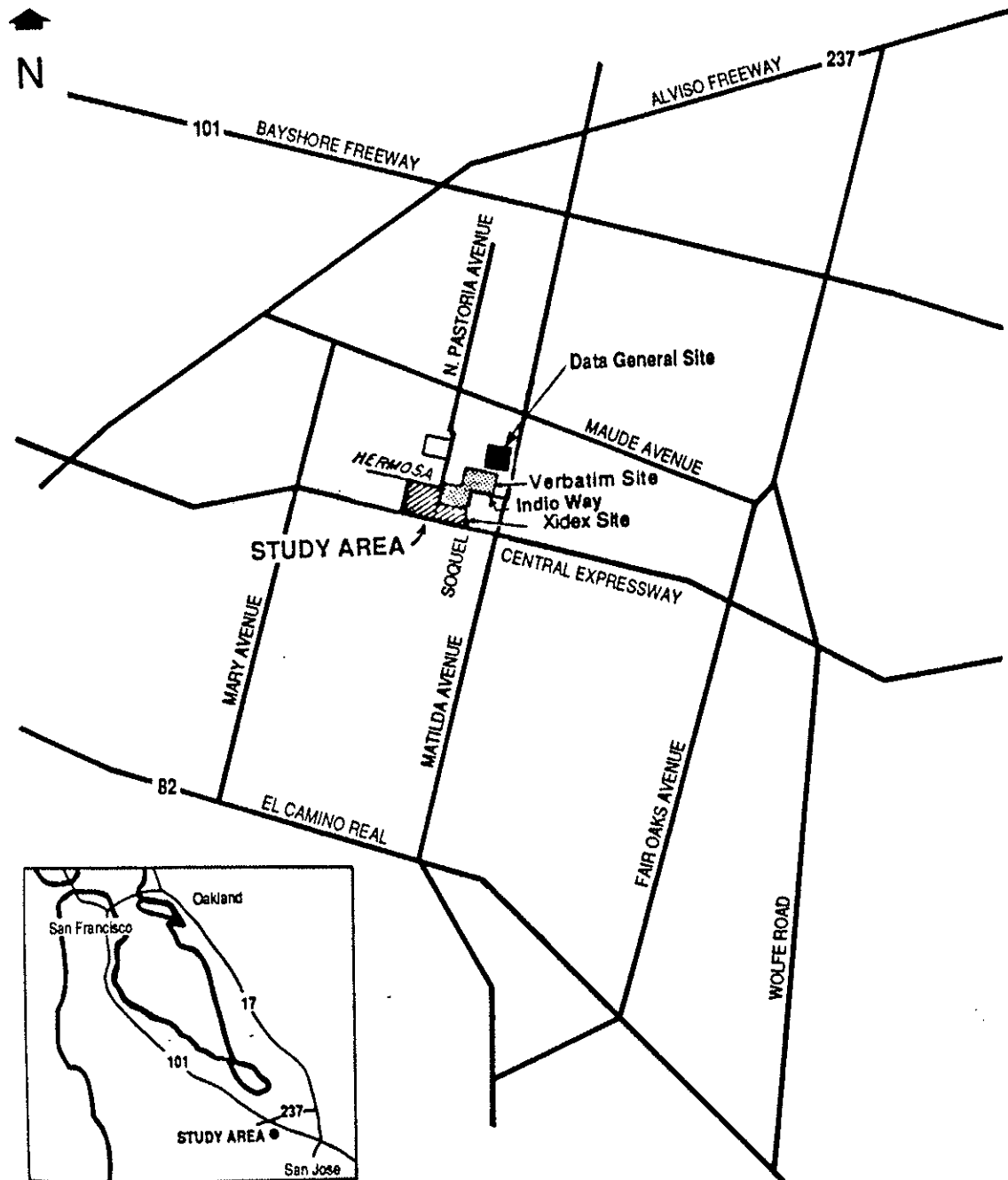
- d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the dischargers.
12. The dischargers shall file a report on any changes in site occupancy and ownership associated with the Verbatim facility described in this Order.
13. If any unauthorized discharge is released to any waters of the state, or discharged and deposited where it is, or probably will be discharged to any waters of the state, the dischargers shall report such discharge to this Board, at (510) 464-1255 on weekdays during office hours from 8 a.m. to 5 p.m., and to the Office of Emergency Services at (800) 852-7550 during non-business hours. A written report shall be filed with the Board within five (5) working days and shall contain information relative to: the nature of waste or contaminant, quantity involved, duration of incident, cause of spill, Spill Prevention, Control, and Countermeasure Plan (SPCC) in effect, if any, estimated size of affected area, nature of effect, corrective measures that have been taken or planned, and a schedule of these activities, and persons/agencies notified.
14. Pursuant to Section 13304 of the Water Code, the dischargers are hereby notified that the Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this Order. Upon receipt of a billing statement for such costs, the dischargers shall reimburse the Board.
15. The Board will review this Order periodically and may revise the requirements when necessary.
16. This Order supersedes Order No. 87-034 adopted by the Board on April 15, 1987. Order No. 87-034 is hereby rescinded.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on April 15, 1992.



Steven R. Ritchie  
Executive Officer

Attachments: A. Figure 1: General Location Map  
B. Figure 2: Site Map  
C. Self-Monitoring Program

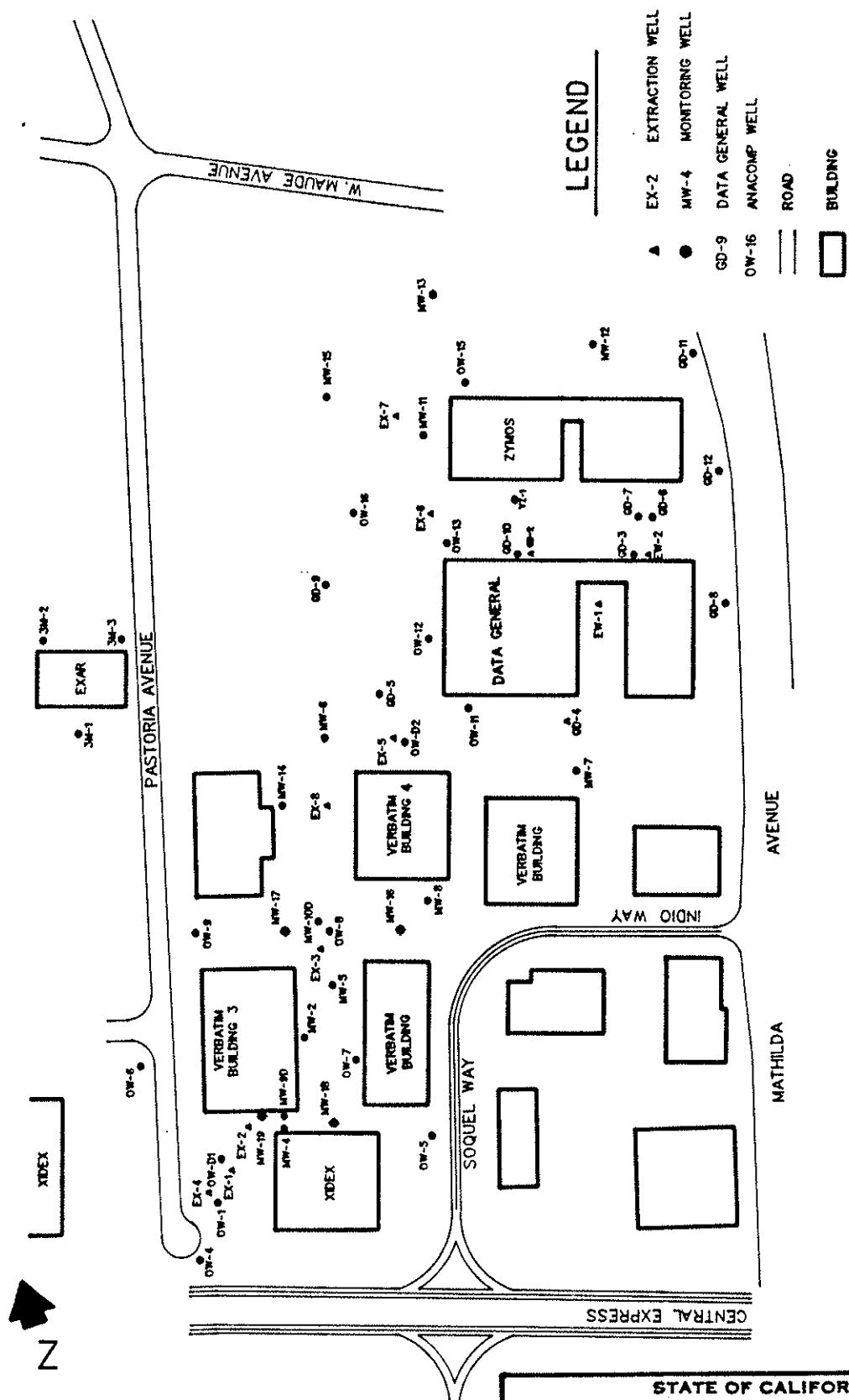


STATE OF CALIFORNIA  
REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION

Figure 1: General Location Map

DRAWN BY:	DATE:	DRWG. NO.
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STATE OF CALIFORNIA  
REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION

Figure 2: Site Map

DRAWN BY:	DATE:	DRWG. NO.
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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION

360 NORTH PASTORIA ENVIRONMENTAL CORPORATION,  
EASTMAN KODAK COMPANY,  
VERBATIM CORPORATION,  
AND  
AETNA LIFE INSURANCE COMPANY

360 NORTH PASTORIA AVENUE FACILITY  
SUNNYVALE, SANTA CLARA COUNTY

GROUNDWATER SELF-MONITORING PROGRAM

A. GENERAL

Reporting responsibilities of waste dischargers are specified in Sections 13225(a), 13267(b), 13268, 13383, and 13387(b) of the California Water Code and this Regional Board's Resolution No. 73-16.

The principal purposes of the waste dischargers' monitoring program, also referred to as a self-monitoring program, are: (1) To document compliance with site cleanup requirements and prohibitions established by this Regional Board, (2) To facilitate self-policing by the waste dischargers in the prevention and abatement of pollution arising from waste discharge, (3) To develop or assist in the development of effluent or other limitations, discharge prohibitions, national standards of performance, pretreatment and toxicity standards, and other standards, and (4) To prepare water and waste water quality inventories.

B. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analyses shall be performed according to the EPA Method 8000 series described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," dated November 1986; or other methods approved and specified by the Executive Officer of this Regional Board.

C. REPORTS TO BE FILED WITH THE REGIONAL BOARD

1. Violations or Potential Violations of Requirements

- a. The dischargers shall file a written technical report at least 15 days prior to advertising for bid on any construction project which may potentially adversely effect the dischargers' soil and groundwater cleanup activities. All projects involving subsurface construction shall be reported.
- b. In the event the dischargers are unable to comply with the conditions of the site cleanup requirements and prohibitions due to:
  - (1) maintenance work, power failures, or breakdown of groundwater

and soil vapor extraction and treatment equipment, or

- (2) accidents caused by human error or negligence, or
- (3) other causes such as acts of nature, or
- (4) poor operation or inadequate system design,

the dischargers will accelerate pertinent portions of the monitoring program if required by the Regional Board's Executive Officer. Such analysis shall continue until such time as the dischargers are back in compliance with the conditions and prohibitions of the site cleanup requirements, or until such time as the Executive Officer determines to be appropriate. The results of such monitoring shall be included in the regular Self-Monitoring Report.

2. Bypass Reports

Bypass reporting shall be an integral part of the regular monitoring program report. A report on bypassing of treatment units shall be made which will include cause, time and date, duration and estimated volume bypassed, method used in estimating volume, and persons and agencies notified. Notification to the Regional Board shall be made immediately by telephone (510-464-1255), followed by a written account within 15 days.

3. Self-Monitoring Reports

a. Reporting Period:

Written reports shall be filed regularly each quarter within one month from the end of the quarter monitored. The first quarterly report is due July 31, 1992.

b. Letter of Transmittal:

A letter transmitting self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period and actions taken or planned for correcting any requirement violation. If the dischargers have previously submitted a detailed time schedule for correcting requirement violations, a reference to this correspondence will be satisfactory. Monitoring reports and the letter transmitting reports shall be signed by either a principal executive officer or his duly authorized employee. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true and correct.

c. Data Results:

- (1) Results from each required analysis and observation shall be submitted in the quarterly self-monitoring regular reports. Results shall also be submitted for any additional analyses performed by the dischargers at the specific request of the Regional Board. Quarterly water level data shall also be submitted in the quarterly report.
- (2) The quarterly report shall include a discussion of unexpected operational changes which could affect performance of the extraction system, such as flow fluctuations, maintenance shutdown, etc.
- (3) The quarterly report shall also identify the analytical procedures used for analyses either directly in the report or by reference to a standard plan accepted by the Regional Board's Executive Officer. Any special methods shall be identified and shall have prior approval of the Executive Officer.
- (4) Original lab results shall be retained and shall be made available for inspection for six years after origination or until after all continuing or impending legal or administrative actions are resolved.
- (5) The dischargers shall describe in the quarterly monitoring report the effectiveness of the actions taken to regain compliance if compliance is not achieved. The effectiveness evaluation shall include the basis of determining the effectiveness, water surface elevations for each well used to determine water surface elevation contours and water quality data.
- (6) The annual report shall be combined with the quarterly report submitted on January 31, of each year and shall include cumulative data for the current year for each parameter of concern. The annual report shall also include minimum, maximum, median and average water quality data for the year. Water level data and GC/MS results shall be included in the annual report. The annual report shall also include contour maps for THF present above detectable concentrations.

d. Self-Monitoring Program (SMP) Revisions:

Additional long term or temporary changes in the sample collection frequency and routine chemical analysis may become warranted as monitoring needs change. These changes shall be based on the following

criteria and shall be proposed in a quarterly report. The changes shall be implemented no earlier than 45 days after a self-monitoring report is submitted for review or not at all if the proposal is found to be unacceptable by the Regional Board's Executive Officer.

Criteria for SMP revisions:

- (1) Discontinued analysis for a routine chemical parameter for a specific well after a one-year period of below detection limit values for that parameter.
- (2) Changes in sampling frequency for a specific well after a one-year period of below detection limit values for all chemical parameters from that well.
- (3) Temporary increases in sampling frequency or changes in requested chemical parameters for a well or group of wells because of a change in data needs (e.g., evaluating groundwater extraction effectiveness or other cleanup strategies).
- (4) Add routine analysis for a chemical parameter if the parameter appears as an additional chromatographic peak in three consecutive samples from a particular well.
- (5) Add routine chemical parameters for new wells based on the results of initial GC/MS analysis.
- (6) Alter sampling frequency based on evaluation of collective data base.
- (7) Following a temporary increase in sampling frequency, as described in C.1, the regular sampling frequency will resume after 4 samples show stable or decreasing concentrations provided the sampling indicates compliance with the Site Cleanup Requirements.

D. DESCRIPTION OF GROUNDWATER SAMPLING STATIONS

<u>Stations</u>	<u>Description</u>
Listed in Table SMP-1 and shown in Figure 1	All current and future monitoring and extraction wells.

E. SCHEDULE AND CONDITIONS OF SAMPLING AND ANALYSIS

The schedule and conditions of sampling and analysis shall be as given herein:

1. Unless otherwise specified, all samples should be analyzed by EPA method 8240 plus THF, and a modified EPA method 8015 for lower alcohols and ketones.
2. Once every three months, while cleanup standards are being achieved, representative samples shall be collected for analyses from monitoring wells listed in Table SMP-1 and as shown on Figure 1. All samples of one event shall be collected at approximately the same time.
3. For any new extraction or monitoring well that may be constructed, sampling and analysis shall be conducted on a quarterly schedule for a term to be decided by the Regional Board's Executive Officer but not less than one year. A GC/MS analysis shall be performed on each new well immediately after installation and well development and all peaks identified and reported on each well in the next quarterly report.
4. After cleanup standards have been achieved, samples shall continue to be collected for analyses from all monitoring and extraction wells identified in Table SMP-1 on a quarterly (once every three months) basis during a one-year stability period. The one year stability period is to demonstrate the consistency of the groundwater quality in meeting the cleanup standard.
5. Following completion of the stability period, samples shall be collected for analyses from the following wells once a year for a period not less than three years, as a part of a long term monitoring program: MW-19, MW-9D, OW-8, OW-D2, GD-5, OW-13 and MW-13.

At the end of the three-year long term monitoring period, specific wells may be identified for biannual post closure monitoring, if deemed necessary by the Regional Board's Executive Officer.

6. All chemical analyses shall have detection limits below the state action level for water for all constituents analyzed.
7. Groundwater elevations shall be obtained and reported on a quarterly basis from each monitoring and extraction well listed in Table SMP-1. In addition, the depth of the pump in all extraction wells shall be obtained and submitted in the quarterly report with the sampling results.
8. Depths of wells in Table SMP-1 shall be determined on an annual basis and compared to the depth of the well as constructed. The results of this comparison shall be reported in the annual report specified in C.3.c.(6).

I, Steven R. Ritchie, Regional Board Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedure set forth in this Regional

Board's Resolution No. 73-16 in order to obtain data to determine compliance with Regional Board Order No. 92-040.

2. Is effective on the date shown below.
3. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the dischargers and revisions will be ordered by the Executive Officer.

Effective Date: April 15, 1992



Steven R. Ritchie  
Executive Officer

Attachments: Figure 1 - Proposed Monitoring Well Locations  
Table SMP-1 - Schedule for Sampling, Measurements, and Analysis

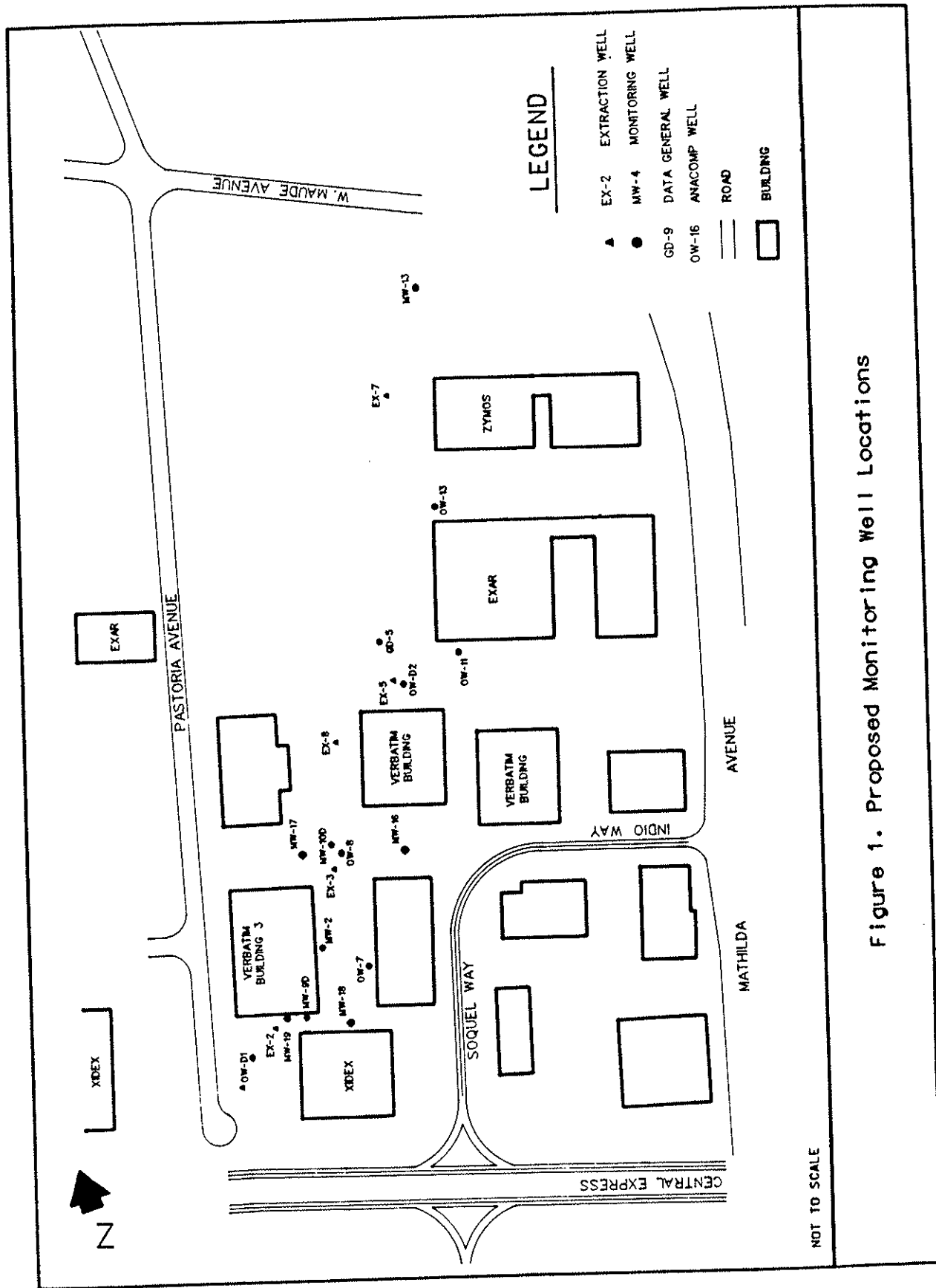


Figure 1. Proposed Monitoring Well Locations



**TABLE SMP-1**  
**SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS**

**GROUNDWATER SELF-MONITORING PROGRAM**

360 NORTH PASTORIA ENVIRONMENTAL CORPORATION,  
 EASTMAN KODAK COMPANY,  
 VERBATIM CORPORATION, AND  
 AETNA LIFE INSURANCE COMPANY

360 NORTH PASTORIA AVENUE FACILITY  
 SUNNYVALE, SANTA CLARA COUNTY

Wells	1ST QUARTER (Jan.-Mar.)	2ND QUARTER (Apr.-June)	3RD QUARTER (July-Sep.)	4TH QUARTER (Oct.-Dec.)
EX-2				x
EX-3				x
EX-5		x		x
EX-7		x		x
EX-8	x	x	x	x
GD-5	x		x	
MW-2	x		x	
MW-13				x
MW-16	x	x	x	x
MW-17	x	x	x	x
MW-18	x	x	x	x
MW-19	x	x	x	x
MW-9D				x
MW-10D				x
OW-7		x		x
OW-8	x	x	x	x
OW-11				x
OW-13	x		x	
OW-D1				x
OW-D2				x

Note: 1. Type of sample = Grab sample  
 2. Type of analysis = EPA Method 8240 plus Tetrahydrofuran  
 and modified EPA Method 8015 for lower alcohols and  
 ketones